

Description of
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Description

Input element for a telephone

The invention relates to input or a choice element as well as an input device for a telephone, in particular for a mobile telephone.

choice or operating elements both for a key telephone and a mobile telephone are known. Usually the made input and/or. Selection of menu items and/or digits over a 12 key block and other keys for selecting other functions. Frequent one the made selection of the other Functions by sequential printing of a key or one Pair of keys, so for example sequential higher counting down, as well as a selection by cursor keys.

An other known form of the operation of a mobile telephone made over a so called Jog dial, as this is for example with newer mobile telephones of the company Sony realized. The Jog dial is in the mobile telephone an arranged

Adjusting wheel, which exhibits a turning function and a print function. For example through tricks Jog dial adjusting wheel can be gescrollt by a menu or the digits 0-9, whereby a pressure in radial direction on the Rädchen for example one confirmation or selection function of the function or digit realized selected by the rotational movement. Adverse one with this solution is, daH this form of the input with longer telephone numbers to prolonged lasts in particular and to a comparatively high cognitive and motor load drove.

Furthermore there is still the input as fundamental other possibility of the data input and/or. Control by speech input. For miniaturized apparatuses this form has still none Ready for the market obtained, and/or is at present still technical and financial to expensive.

General ones will of 12-grope in trains of the other miniaturization the flat ones Informations- und of communication terminals available for the user interface as for example GSM and DEK TZE lefone always small, so the traditional block on future apparatuses no more place will find.

The invention is the basis the object to create an input element as well as an input device which have a reduced space requirement and which avoid disadvantages of the Jog dial.

The object becomes by the features of the input element after Claim 1 as well as the input device according to claim 10 dissolved. Preferred aspects of the invention are subject matter the Unteransprüche.

The input element according to invention exhibits an input means, whereby the input means a turning function in two directions, D. h. forward and backwards, and covers two key functions. The movement directions to generation of the key functions are in a plane vertical each other opposite arranged to the plane of rotation and. Preferably that becomes Input means by an adjusting wheel formed, whereby the adjusting wheel can become from the plane of the rotational movement tilted after each side by the practice of a corresponding pressure out, so also of one pressure or tilting function spoken will can. By a corresponding apparatus by a signal will thus be to dumps generated, daH two possible signals at the disposal.

The visualization and/or. Feedback of the selection over circular mounted elements, for example illuminated digits, analogue to the rotational movement of the adjusting wheel, possesses an high self explanation ability and a supported formation of sensomotorischer skills with the user, which use altogether cognitive facilitated and motor accelerated.

Preferably the movement of the adjusting wheel idle rotary is provided or with a stop, whereby the rotational movement rasterized can be ungerastert or. These other features depend in each case on the corresponding application.

Furthermore the adjusting wheel according to invention can be comprising input element with a display to an input device coupled, which is cognitive compatible to the rotational movement of the adjusting wheel. Preferably it acts thereby around a groflachige, in particular circular display area, on that the corresponding menus, submenu, menu items or Digits essentially on a circle arranged are, like that a direct association between the display and that

Adjusting wheel for the user given is. The combination that Rotational movement of the adjusting wheel and the display facilitated and accelerated Auswahl- bzw tuned on it. Transaction and reduced perception error.

For example would take over selected entry can and/or. the selected digit, which are shown on the display in each case, via pressure on a side of the adjusting wheel transverse to the rotating direction, D take place. h. with a first key function. By pressure on the other side of the adjusting wheel transverse to the rotating direction can do an other function, for example leaving of a menu (ESC) or the deletion one Character (backspace) released become, D. h. with a second key function.

The advantages of the solution according to invention are as follows:

Reduction of the space requirement opposite traditional Tastenlo sungen as for example the 12 figure key block,

Reduction of the probability of faulty operations, like this during an adjusting wheel draw with a print function in

Rotating direction frequent seems, since becomes also always applied by the rotation of the adjusting wheel a pressure in axial direction of the adjusting wheel, to that and. And. the key function draws lots. By the complete decoupling of the turning functions of the two Druck-bzw. One prevents to key functions inadvertent drawing lots of the key function. Furthermore the display of the current selection is unmistakable than with, by the circular array pra gnanter and, known solutions.

An other key function is available in the comparison with herkömmlichen adjusting wheel passwords, whereby common dialogue controls, for example " cursors UP/down " or " OK ONE " and "escape", without which arrangement of an heavy other key or a pedantic auxiliary construction, for example " escape " as represented menu item, which can be served, realized to become to be able, whereby the solution according to invention a prompt with significant increased comfort possible. The input device according to invention of integrated elements in an input element, needed therefore all for a comfortable prompting.

Preferable embodiments of the invention become subsequent explained on the basis the designs.

Fig. 1 shows a principle representation of the according to invention

Input element,

Fig. a detail view of a possible storage shows 2 of the

Adjusting wheel of the input element of the Fig. 1,

Fig. the arrangement of an input element shows 3 in a round housing,

Fig. a plan view shows 4 to the incorporated input element of the Fig. 3,

Fig. a first embodiment of a mobile telephone with " analogue " display shows 5,

Fig. a second embodiment of a mobile telephone with " digital " display shows 6,

Fig. a third embodiment of a mobile telephone with wide display shows 7, and

Fig. an other possibility of the arrangement of the input element shows 8 in a mobile telephone.

Fig. 1 shows invention in accordance with acre an input element, which exhibits in as input means serving adjusting wheel 11. Preferably the adjusting wheel 11 is provided with a corrugation. That

Adjusting wheel is 12 stored on an axis, and is into two to each other opposite directions 13 and 14 more rotatable. Furthermore the adjusting wheel 11 is more tiltable into a standing plane essentially vertical to the plane of the rotational movement. With others

Words, the adjusting wheel 11 D can do 15 and 16 moved into the opposite directions. h. with pressure pressure offset or tilted become. To the determination of the rotational movement is in Pickup or sensor 17 provided. This pickup firr that

An other knows MaB and the direction of the rotational movement by

Adjusting wheel formed become. Other sensors, which are based on electrical and/or optical methods, are more insertable.

To the determination of the pressure movement or tilting of the adjusting wheel mutually the adjusting wheel 11 in each case sensors are 18 and 19 arranged. These sensors can be for example push-buttons. Other sensors those on electrical and/or optical methods are based, are just as more insertable.

Fig. 2 shows a cross section by the input element. In order to be able to realize the two key functions of the input element, the adjusting wheel is 11 on the axis 12 means one Ball joint or ball bearing 20 pivotally supported. With spielsweise can become the ball joint 20 by an essentially spherical embodiment of the axis 12 achieved.

Through after auben directed bevels of a part of the inner surface of the axle drilling of the adjusting wheel 11 the maximum tilt angles fixed can become. Furthermore are likewise those Directions tilt or of the pressure movement 15 and 16 as well as those Tilt sensors 18 and 19 shown.

Fig. the scheme of cooperating the adjusting wheel 11, which is in four directions movable, with a circular display area of a circular mobile telephone 21 shows 3.

Fig. a plan view shows 4 to an adjusting wheel 11 with the rotating directions 14 and 15, here by a reciprocal arrow shown, as well as the tilting directions 15,16 provided with a corrugation. The adjusting wheel 11 is here in a cutout 22 of a not represented mobile telephone arranged. For example 15 can become the digits 0,1,..., 9 driven by rotation into a direction 14. Printing of the Adjusting wheel 11 in the fig escape draws to the left/back out, protecting prints OK/Enter draws lots to the right.

Fig. a view of a first embodiment one shows 5

Mobile telephone 21 with so called " analogue " selection announcement, whereby the mobile telephone has a circular shape. That

Mobile telephone exhibits a circular surface, which becomes in the following designated as display area, on the Menusym bole 23 and digits 24 arranged is. Both the menu symbols and the digits are 24 in each case arranged on a circle. The digits 24 and/or. the menu symbols 23 become

Selection rear-shines, for example by corresponding

Light emitting diodes. The selection made thereby over the lateral input element arranged in the mobile telephone 21, of which a part of the adjusting wheel stands out 11 here and is more visible. In that

Center of the display area of the mobile telephone 21 is furthermore a display 25, which serve the selected number sequence for example for the representation. Furthermore the mobile telephone 21 exhibits an inertial cord formed as antenna 26.

Fig. a simplified version of a mobile telephone with so called " digital " display shows 6. Here only one selection announcement 27 on the display area of the mobile telephone is 21 arranged. By tricks and printing of the adjusting wheel 11 a digit or a menu becomes selected and 25 displayed in the display.

Fig. a third embodiment of a circular shows 7

Mobile telephone 21. Here the display area of the mobile telephone becomes 21 nearly complete a display 30 the arranged rear of a circular disc 29, which becomes formed by a filter, filled, is. On this display the menu symbols 23 and digits (here not shown) become generated.

The menu symbols are 23 arranged also on a circle here. The selection of a menu becomes by the lateral arranged adjusting wheel 11 made. That can be multi color display, in order to obtain a better visualization.

A variant of this solution consists of it that the rear filter 29 only a small display is to the display of the digits and the menu symbols 23 direct on the filter 29 arranged are, whereby they become by a lighting device, for example light emitting diodes, separate illuminated kon nen, in order to clarify and indicate the respective selection.

Fig. an embodiment of a mobile telephone 21 shows 8, 21 arranged with which the adjusting wheel is in a recess 31 of the mobile telephone. Furthermore a displaceable cover is 32 present. With nonusage of the mobile telephone 21 those can

Cover over that buried arranged adjusting wheel pushed, so the adjusting wheel 11 protected becomes is. Furthermore a use barrier of the adjusting wheel can be connected with the cover.

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- Claims 1. Input element for entering data, whereby the input element two turning functions in opposite in each case
 , Exhibits characterised in that the input element (10) exhibits directions two from the turning functions unabhan gige, key functions, whereby the key functions become essentially vertical by a movement in a plane the plane of the rotational movement triggered.
2. Input element according to claim 1, thus gekenn z e i C h n e t, dal the key functions through pressure or
 Tilting functions realized are.
3. Input element according to claim 1 or 2, ge thus marks, the input element (10) an adjusting wheel (11) exhibits.
4. Input element according to claim 3, thus gekenn z e i C h n e t, daB the adjusting wheel (11) axial on a bearing (20) stored is, like that tilting the adjusting wheel (11) from the plane of rotation after both sides possible becomes.
5. Input element according to claim 4, thus gekenn draws, the bearing (20) a ball joint is.
6. Input element according to claim 4 or 5, D A D u r C h g e k e n n z e i C h n e t, dal the input element (10) two sensors (18,19) to the determination of the tilting movement exhibits, which are arranged on both sides the adjusting wheel (11) within the tilting range.
7. Input element after one of the claims 3-6, characterised in that the rotation of the adjusting wheel (11) resting or not resting made.
8. Input element after one of the claims 3-7, dad u r C h g e k e n n z e i C h n e t that the rotation of the adjusting wheel (11) is provided with a stop unsolicited or.
9. Input element after one of the preceding claims, characterised in that the input element (10) a

sensor (17) to the determination of the rotational movement and direction exhibits.

10. Input device with an input element (11) after one of the preceding claims and a display device (21) to displays of menu items and/or digits.

11. Input device according to claim 10, ge thus marks, daB the display device (21) large vertic. stabil. A chig, preferably circular is.

12. Input device according to claim 11 or 12, characterised in that the menu items and/or digits essentially along a circle arranged is.

13. Input device after one of the claims 10-12, characterised in that the display at least two various colours exhibits.

14. Telephone, in particular mobile telephone (21), with a display device after one of the claims 10-13.